RepRisk Spatial Analytics

Space for Finance – how space technology can support the greening of the financial sector

European Space Agency (ESA) Downstream Gateway Digital Workshop

Dr. Philipp Aeby, CEO, philipp.aeby@reprisk.com

ESA UNCLASSIFIED – For ESA Official Use Only

RepRisk

A global leader and pioneer in ESG data science

RepRisk supports due diligence in the financial sector and for 3rd party risk management

80+ of the world's leading banks

rely on RepRisk for their due diligence and risk management processes

17 of the 25 largest investment managers

trust RepRisk as an ESG risk overlay for the investments

The world's largest sovereign wealth fund

has used RepRisk since 2009 to screen its portfolio for environmental and social risks

The leading sustainability index providers

S&P DJI, SAM (DJSI), and FTSE4Good have integrated RepRisk data into their methodologies

10+ UN agencies and the UN Global Compact Foundation

trust RepRisk for their partner, project, and country due diligence on ESG risks

The Sustainability Accounting Standards Board (SASB)

utilized RepRisk data as a key research input when developing their ESG materiality framework

ESG risk incidents can materially impact a company's bottom line

RepRisk identifies and assesses ESG risk incidents daily

ESG through a risk lens

With an outside-in perspective

Powered by a unique combination of AI & machine Learning + human intelligence (HI)

Daily-updated research and metrics, since January 2007

The world’s largest database on ESG risks

165,000+
Companies

40,000+
Infrastructure projects

34
Sectors

ALL
Countries

Machine learning: Training a neural network to identify specific ESG issues within a risk incident

	Sample input	Sample output
Detect language	消费者W女士(化名）奔驰维权案引起社会关注。 前期西安市高新区市场监管部门已依法立案调查。	Mandarin
Tokenization (e.g. jieba) and text cleaning	消费者W女士(化名）奔驰维权案引起社会关注。 前期西安市高新区市场监管部门已依法立案调查。	消费者 / W / 女士 / (化名 / 奔驰 / 维权 / 案 / 引起 / 社会/关注 / 。/ 前期 / 西安市 / 高新区 / 市场 / 监管 / 部门 / 已 / 依法/ 立案 / 调查
Translate tokens to vectors	消费者 / W / 女士 / (化名 / 奔驰 / 维权 / 案 / 引起 / 社会/ 关注 / 。/ 前期 / 西安市 / 高新区 / 市场 / 监管 / 部门 / 已 / 依法/ 立案 / 调查	$x = [0, 2, 0, 1, 0, 0, 6, \dots]$
Train a model, e.g. recurrent neural network	Untrained / pretrained model: $f(W)$ Training samples: Features: $X = [x_1, x_2, x_3, \dots x_n]$ Labels: $Y = [y_1, y_2, y_3, \dots y_n]$	Predictive model: $f(W)$ W: optimized parameters
Classify stream of incoming documents in different languages	New / unseen text (tokenized & vectorized) $\rightarrow\ x_{new} = [0, 3, 0, 0, 1, 2, 0, \dots]$	Prediction: $\rightarrow\ y_{new} = f(W, x_{new})$ Top predicted ESG issues: Fraud, Products Safety

From sentiment to sensing

Phase I
Proximity Analysis

RepRisk provides company-asset ESG risk insights based on proximity of projects to environmentally and socially sensitive areas

Phase II
Remote Sensing

RepRisk provides company-asset ESG risk insights based on emissions and land use data from satellite imagery

RepRisk Spatial Analytics: Phase I

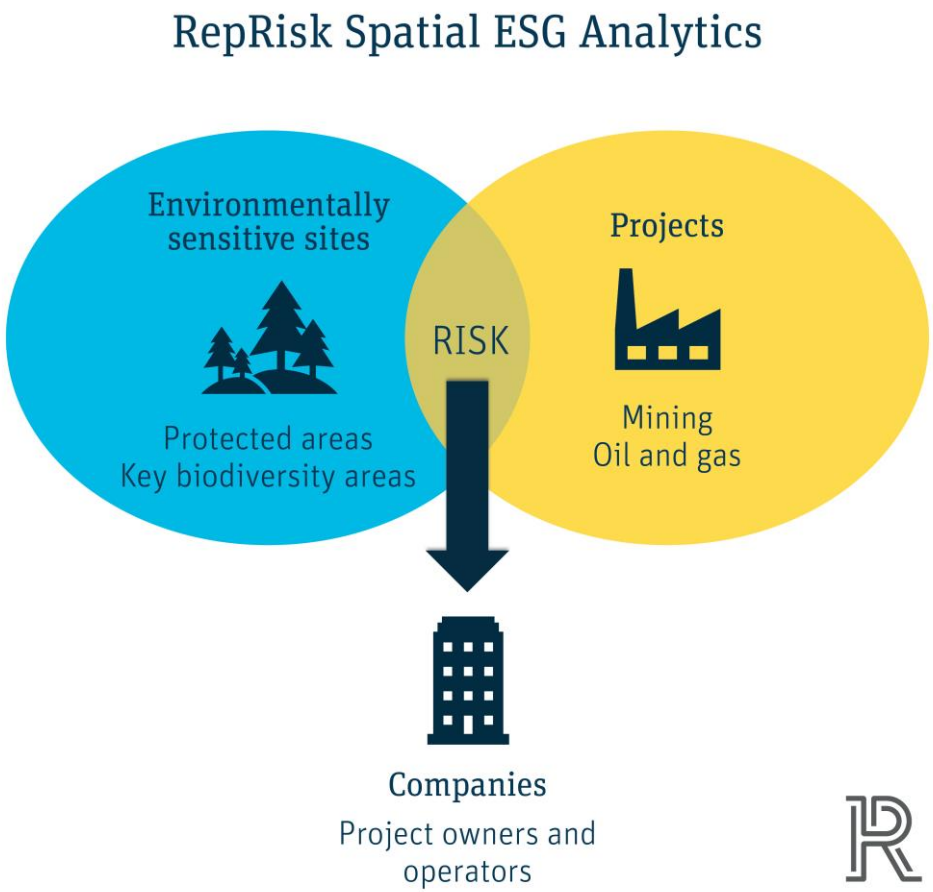
Maps projects in high local footprint industries to GPS coordinates

Provides insight into company assets' ESG risks based on proximity of projects to environmentally and socially sensitive areas

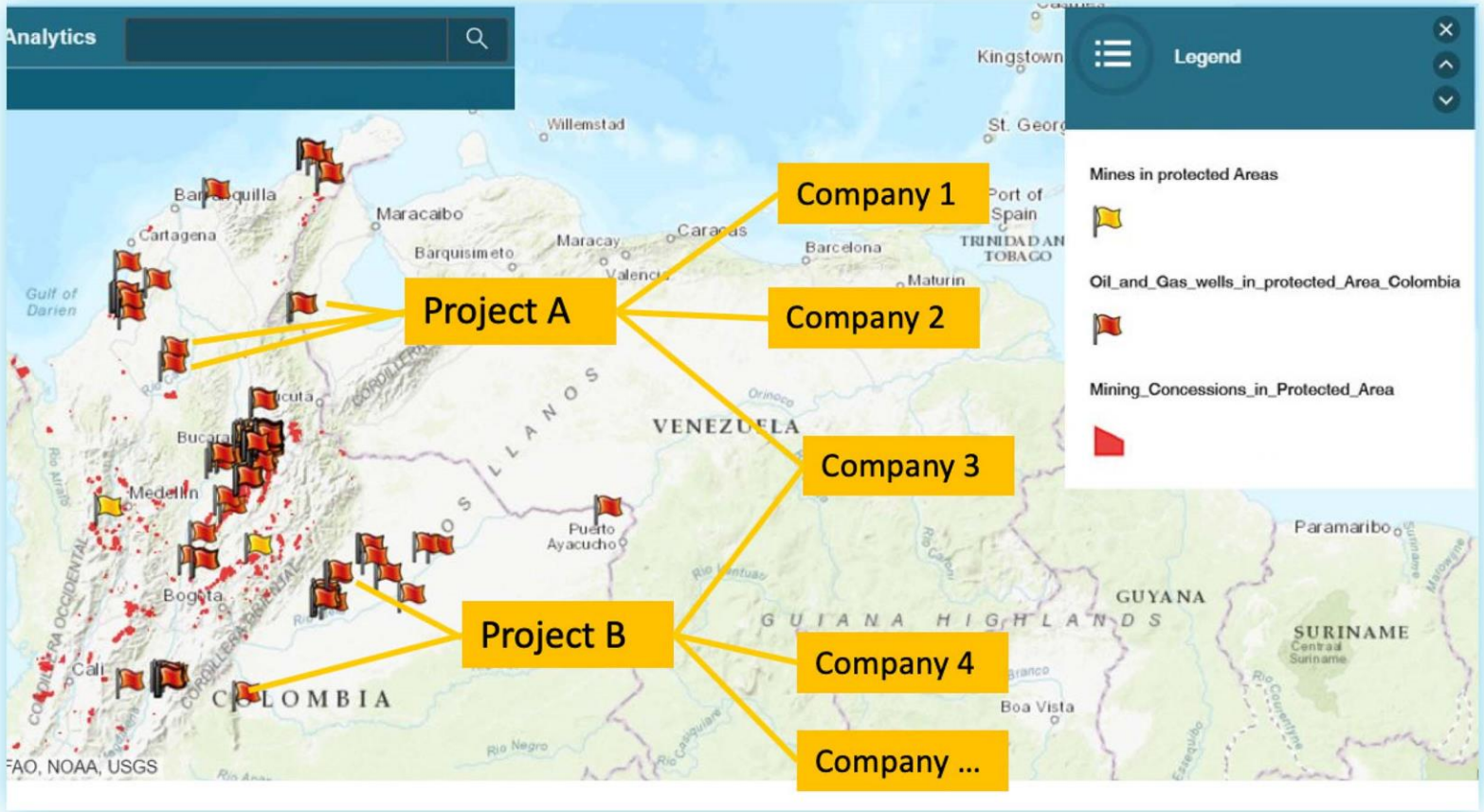
Associates these risks to companies owning or operating these assets

Immediate focus
- **Mines and Oil & Gas projects**
- **Environmentally sensitive sites**

Future developments
- **Socially sensitive sites, land use**
- **Emissions**



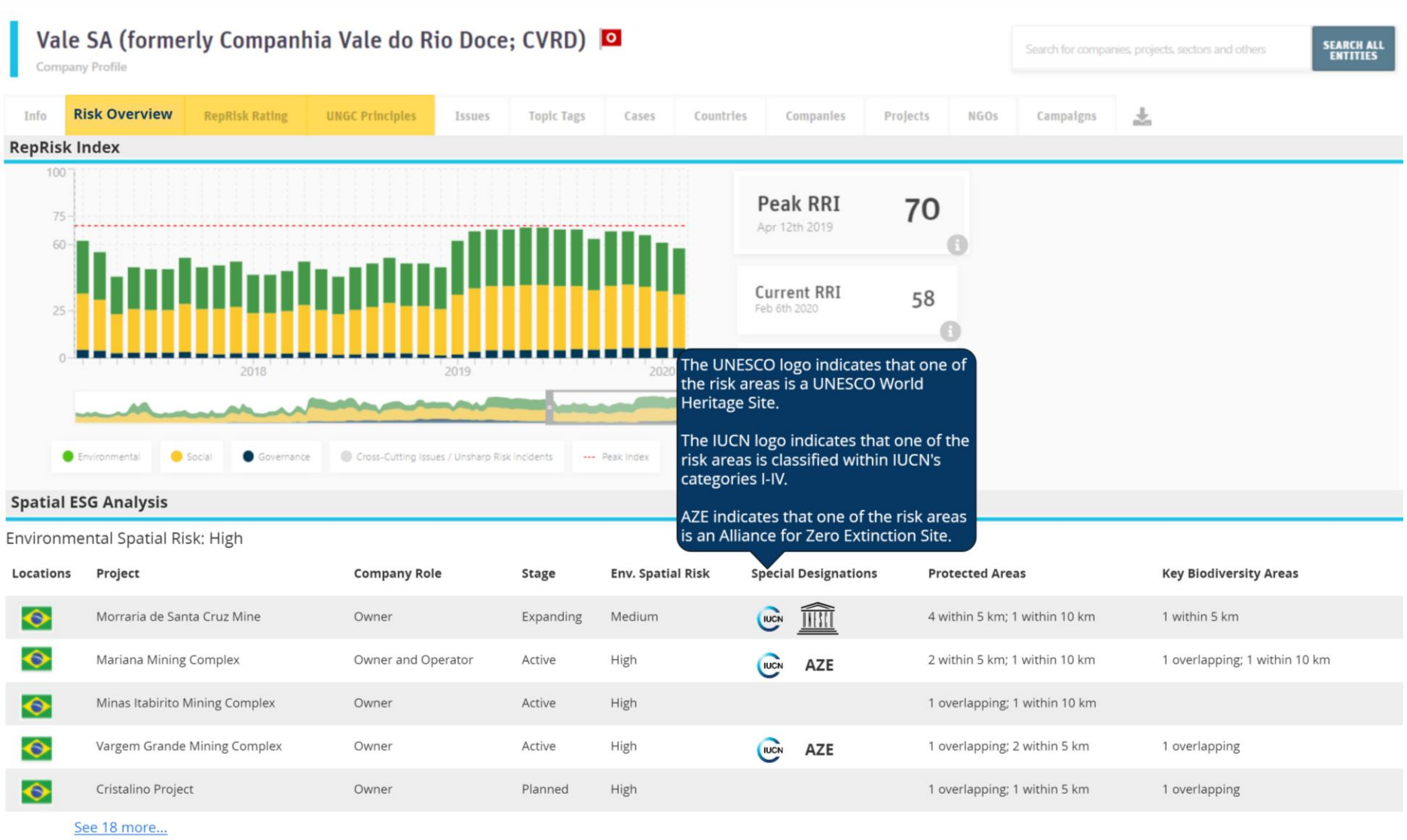
Adding asset-level ESG risk intelligence using GIS data



Maps infrastructure projects in industries with high local footprint to their respective GPS coordinates

Provides insights into the ESG risks resulting from the location of the project assets vis-à-vis environmentally and/or socially sensitive areas, e.g. protected areas, UNESCO World Heritage Sites

Associates these risks to companies owning or operating these assets and adds this risk intelligence to companies' ESG risk research


Vale SA (formerly Companhia Vale do Rio Doce; CVRD)
Company Profile
Search for companies, projects, sectors and others
SEARCH ALL ENTITIES
Info
Risk Overview
RepRisk Rating
UNGC Principles
Issues
Topic Tags
Cases
Countries
Companies
Projects
NGOs
Campaigns
RepRisk Index
100
75
60
25
0
2018
2019
2020
Peak RRI
Apr 12th 2019
70
Current RRI
Feb 6th 2020
58
Environmental
Social
Governance
Cross-Cutting Issues / Unsharp Risk Incidents
Peak Index
The UNESCO logo indicates that one of the risk areas is a UNESCO World Heritage Site.
The IUCN logo indicates that one of the risk areas is classified within IUCN's categories I-IV.
AZE indicates that one of the risk areas is an Alliance for Zero Extinction Site.
Spatial ESG Analysis
Environmental Spatial Risk: High
Locations
Project
Company Role
Stage
Env. Spatial Risk
Special Designations
Protected Areas
Key Biodiversity Areas
Morraria de Santa Cruz Mine
Owner
Expanding
Medium
4 within 5 km; 1 within 10 km
1 within 5 km
Mariana Mining Complex
Owner and Operator
Active
High
AZE
2 within 5 km; 1 within 10 km
1 overlapping; 1 within 10 km
Minas Itabirito Mining Complex
Owner
Active
High
1 overlapping; 1 within 10 km
Vargem Grande Mining Complex
Owner
Active
High
AZE
1 overlapping; 2 within 5 km
1 overlapping
Cristalino Project
Owner
Planned
High
1 overlapping; 1 within 5 km
1 overlapping
See 18 more...

Thank you!

Get in touch

Zurich Headquarters
RepRisk AG

Stampfenbachstrasse 42
8006 Zurich
Switzerland

EMEA Hub
RepRisk Germany GmbH

Rosenthaler Strasse 23
10119 Berlin
Germany

Americas Hub
RepRisk North America Inc.

250 The Esplanade,
Suite 302
Toronto, ON M5A 1J2,
Canada

Asia Pacific Hub
RepRisk Philippines Inc.

Unit 20-02,
20th Floor Accralaw Tower
30th Street corner 2nd Avenue,
Bonifacio Global City
Taguig City, Philippines 1630

Phone **+41 43 300 54 40**

E-mail **contact@reprisk.com**

Website **www.reprisk.com**

Follow us

RepRisk AG, Zurich, Switzerland | reprisk.com | RepRisk® is a registered trademark

Copyright 2020 RepRisk AG. All rights reserved. RepRisk AG owns all intellectual property rights to this presentation, which may not be distributed to any third party without RepRisk's written consent. This information herein is given in summary form and does not purport to be complete. Any reference to or distribution of this presentation must include the entire presentation to provide sufficient context. The information provided in this presentation does not constitute an offer or quote for our services or a recommendation regarding any investment or other business decision. Should you wish to obtain a quote for our services, please contact contact@reprisk.com.